



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/688,303	10/15/2003	Kentaro Nagoshi	SIW-067	9456

959 7590 05/24/2007
LAHIVE & COCKFIELD, LLP
ONE POST OFFICE SQUARE
BOSTON, MA 02109-2127

EXAMINER

ALEJANDRO, RAYMOND

ART UNIT	PAPER NUMBER
----------	--------------

1745

MAIL DATE	DELIVERY MODE
-----------	---------------

05/24/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/688,303

Applicant(s)

NAGOSHI ET AL.

Examiner

Raymond Alejandro

Art Unit

1745

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 April 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3,4 and 6-16 is/are pending in the application.
- 4a) Of the above claim(s) 3,4 and 7-15 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,6 and 16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 August 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

This following Examiner's letter addresses applicant's amendment dated 04/25/07.

Applicant has overcome only the 35 USC 102 rejection over the JP'153. the 35 USC 103 rejections have not been overcome yet. Refer to the foregoing amendment including applicant's rebuttal arguments and remarks. Therefore, the present claims (including new claim 16) are again rejected as the 35 USC 103 rejections are maintained herein and because a new ground of rejection is also presented. rejection still stands for the reasons of record. In addition, a new ground of rejection under section 103 has been added. Accordingly, the present application is being finally rejected for the reasons of record:

Election/Restrictions

1. Claims 3-4 and 7-15 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 05/11/06.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Art Unit: 1745

3. Claims 1, 6 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over the Japanese publication 2000-208153 (hereinafter referred to as the JP'153).

The present claims are geared toward a separator assembly wherein the disclosed inventive concept comprises the specific diffusion layer and separator being joined (welded).

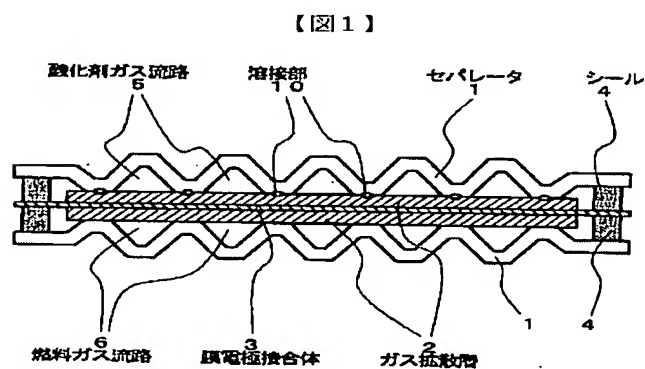
As to claim 1:

The JP'153 discloses a porous metallic gas diffusion layer for diffusing fuel cell reactants (ABSTRACT/P0007). The gas diffusion layer is made of stainless steel (ABSTRACT).

The JP'153 also discloses a metallic separator which is positioned adjacent to the gas diffusion layer (ABSTRACT/P0005).

Both the gas diffusion layer and the metallic separator are bonded by resistance welding at a welding part 10. *Thus, they are welded together.*

Figure 1 below illustrates the gas diffusion layer 2 and the separator 1 adjacent to each other; the gas flow channels 5 and 6; and the welding parts 10.



1st Examiner's note: *It is noted that the instant claims are being construed as product-by-process claims and that the product itself does not depend on the process of making it. Accordingly, in a product-by-process claim, the patentability of a product does not depend on its method of production. In that, it is further noted that the product in the instant claims is the same*

Art Unit: 1745

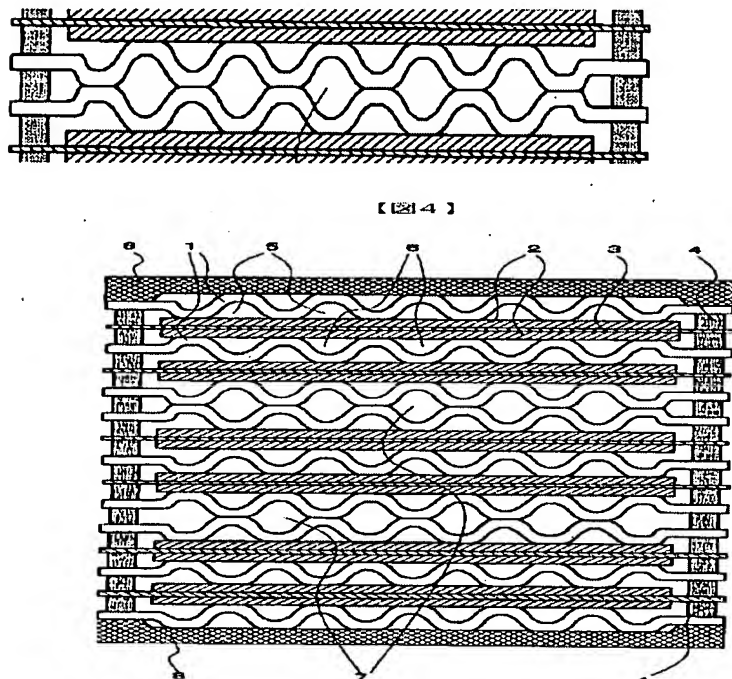
as or obvious over the product of the prior art. In this instant case, the method limitations (i.e. the laser welding or by melting, or by irradiation by a laser beam and by solidifying) do not patentably distinguish the product because what is given patentable consideration is the product itself and not the manner in which the product was made. Therefore, the patentability of a product is independent of how it was made.

As shown above in **Figure 1**, the combination of the corrugated separators 1 and the welding parts 10 allows the formation of reactant passages 5 and 6 (See Figure 1). *Note: the part connecting separator plate 1 and diffusion layer 2 clearly forms partitions in the diffusion layer; consequently, oxidizing gas or fuel pathways are formed. Additionally, welding part 10 formed in the diffusion layer is also part of the partition formed therein.*

2nd Examiner's note: *as to the limitation "the separator being substantially flat", the examiner notes that non-corrugated areas of the disclosed separator 1 are flat. That is to say, each and every segment of the separator 1 (See Figure 1) that is not angled is flat, and thus, it meets the claimed requirement of being "substantially flat" at those specific locations. Note that the examiner is not stating that the entire area or entire perimeter or entire length of the separator is flat per se, but the examiner is stating herein that even though the separator disclosed by the JP '153 is corrugated, such a corrugated separator further comprises non-corrugated areas having a substantially flat shape. Yet further, the examiner contends that the two ends of the disclosed separator meet the requirement of being substantially flat because applicant has not further specified whether the entire separator, or the central area thereof or ends thereof is(are) flat.*

As for claim 6:

Figure 4 below of the JP'153 illustrates the inclusion of separator layers forming cooling water passages 7. *Note that such separator layers are joined together or bonded to form the cooling water passage structure. Enlarged portion of Figure 4 better illustrates this configuration.*



On the matter of claim 16:

As appreciated from viewing **Figure 1** above, the combination of the corrugated separators 1 and the welding parts 10 allows the formation of reactant passages 5 and 6 (See Figure 1). Note that the part connecting separator plate 1 and diffusion layer 2 clearly forms partitions in the diffusion layer; consequently, oxidizing gas or fuel pathways are formed. Additionally, welding part 10 formed in the diffusion layer is also part of the partition formed therein.

The JP'153 discloses a separator as seen and discussed supra. Nonetheless, the preceding prior art reference fails to explicitly disclose the entire area of the separator being substantially flat; and the specific height of flow passage partition.

In light of the above, it would have been obvious to a person possessing a level of ordinary skill in the pertinent art at the time the invention was made to make the separator of the JP'153 by being entirely flat (the entire area thereof being substantially flat) because it is prima-facie obvious to change the shape of a feature/article. It is to be noted that changes in shape is a matter of choice which a person of ordinary skill in the art would have found obvious absent persuasive evidence that the particular configuration of the claimed separator assembly is significant. In re Dailey, 149 USPQ 47. It is also noted that aesthetic design changes having no mechanical function cannot be relied upon to patentably distinguish the claimed invention from the prior art. In re Seid, 73 USPQ 431. (See MPEP 2144.04 [R-1] Legal Precedent as Source of Supporting Rationale)

With respect to the specific height of flow passage partition, it would have been obvious to a person possessing a level of ordinary skill in the pertinent art at the time the invention was made to make the flow passage partition of the separator of the JP'153 by having the specifically claimed height because where the only difference between the prior art and the claims is a recitation of relative dimensions (*i.e. changes in size/proportion*) of the claimed feature and a feature having the claimed relative dimensions would not perform differently than the prior art device, element, or member, the claimed device, element, or member is not patentably distinct from the prior art device, element, or member. That is, limitations relating to the size of the feature, element, or member are not sufficient to patentably distinguish over the prior art as it is

Art Unit: 1745

noted that changes in size is a matter of choice which a person of ordinary skill in the art would have found obvious absent persuasive evidence that the particular size of the claimed height of the flow passage partition is significant. In re Rose 105 USPQ 237; In re Rinehart 189 USPQ 143; In Gardner v. TEC Systems, Inc., 220 USPQ 777 & 225 USPQ 232, (See MPEP 2144.04 [R-1] Legal Precedent as Source of Supporting Rationale).

4. Claims 1, 6 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over the Japanese publication 2000-208153 (hereinafter referred to as the JP'153) in view of Marianowski et al 5342706.

The present claims are geared toward a separator assembly wherein the disclosed inventive concept comprises the specific diffusion layer and separator being joined (welded).

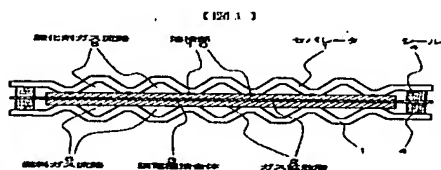
As to claim 1:

The JP'153 discloses a porous metallic gas diffusion layer for diffusing fuel cell reactants (ABSTRACT/P0007). The gas diffusion layer is made of stainless steel (ABSTRACT).

The JP'153 also discloses a metallic separator which is positioned adjacent to the gas diffusion layer (ABSTRACT/P0005).

Both the gas diffusion layer and the metallic separator are bonded by resistance welding at a welding part 10. *Thus, they are welded together.*

Figure 1 below illustrates the gas diffusion layer 2 and the separator 1 adjacent to each other; the gas flow channels 5 and 6; and the welding parts 10.



1st Examiner's note: *It is noted that the instant claims are being construed as product-by-process claims and that the product itself does not depend on the process of making it. Accordingly, in a product-by-process claim, the patentability of a product does not depend on its method of production. In that, it is further noted that the product in the instant claims is the same as or obvious over the product of the prior art. In this instant case, the method limitations (i.e. the laser welding or by melting, or by irradiation by a laser beam and by solidifying) do not patentably distinguish the product because what is given patentable consideration is the product itself and not the manner in which the product was made. Therefore, the patentability of a product is independent of how it was made. In re Brown 173 USPQ 685 and In re Fessman 180 USPQ 324 (Refer to MPEP 2113: Product-by-Process Claims).*

As shown above in **Figure 1**, the combination of the corrugated separators 1 and the welding parts 10 allows the formation of reactant passages 5 and 6 (See Figure 1). *Note: the part connecting separator plate 1 and diffusion layer 2 clearly forms partitions in the diffusion layer; consequently, oxidizing gas or fuel pathways are formed. Additionally, welding part 10 formed in the diffusion layer is also part of the partition formed therein.*

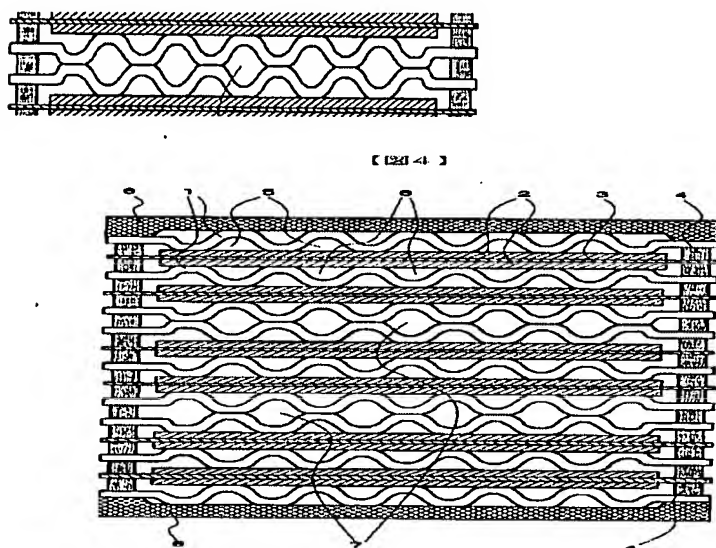
2nd Examiner's note: *as to the limitation "the separator being substantially flat", the examiner notes that non-corrugated areas of the disclosed separator 1 are flat. That is to say, each and every segment of the separator 1 (See Figure 1) that is not angled is flat, and thus, it meets the claimed requirement of being "substantially flat" at those specific locations. Note that the examiner is not stating that the entire area or entire perimeter or entire length of the separator is flat per se, but the examiner is stating herein that even though the separator disclosed by the JP'153 is corrugated, such a corrugated separator further comprises non-*

Art Unit: 1745

corrugated areas having a substantially flat shape. Yet further, the examiner contends that the two ends of the disclosed separator meet the requirement of being substantially flat because applicant has not further specified whether the entire separator, or the central area thereof or ends thereof is(are) flat.

As for claim 6:

Figure 4 below of the JP'153 illustrates the inclusion of separator layers forming cooling water passages 7. Note that such separator layers are joined together or bonded to form the cooling water passage structure. Enlarged portion of Figure 4 better illustrates this configuration.



On the matter of claim 16:

As appreciated from viewing **Figure 1** above, the combination of the corrugated separators 1 and the welding parts 10 allows the formation of reactant passages 5 and 6 (See Figure 1). Note that the part connecting separator plate 1 and diffusion layer 2 clearly forms partitions in the diffusion layer; consequently, oxidizing gas or fuel pathways are formed.

Art Unit: 1745

Additionally, welding part 10 formed in the diffusion layer is also part of the partition formed therein.

The JP'153 discloses a separator as seen and discussed supra. Nonetheless, the preceding prior art reference fails to explicitly disclose the entire area of the separator being substantially flat; and the specific height of flow passage partition.

Marianowski et al disclose separator plates provide the dual function of providing a gas chamber non-reactive separator as well as providing structural strength to the fuel cell as an internal load bearing member (Col 9, line 63 to Col 10 line 6). While it is preferred to use separator having a corrugated and/or dimpled cross-sectional shape in the active area to provide both strength and better gas circulation adjacent the electrodes, the principles of this invention are also applicable to flat separator plates structured to provide peripheral seal areas and to provide seals around internal manifold holes while allowing gas to pass to and from the internal manifolds as required for fuel cell operation (Col 9, line 63 to Col 10 line 6).

In view of the above, it would have been obvious to a person having ordinary skill in the art to replace the corrugated separator plate of the JP'153 with the flat separator plate of Marianowski et al as Marianowski et al disclose that while it is preferred to use separator having a corrugated and/or dimpled cross-sectional shape in the active area to provide both strength and better gas circulation adjacent the electrodes, the principles of this invention are also applicable to flat separator plates structured to provide peripheral seal areas and to provide seals around internal manifold holes while allowing gas to pass to and from the internal manifolds as required for fuel cell operation. Thus, Marianowski et al provide sufficient direction to interchange corrugated separator plates and flat separator plates without affecting or generating major

Art Unit: 1745

technical, structural or mechanical disadvantages. In further support of that, it is contended that it is prima-facie obvious to change the shape of a feature/article. In general, change in shape is a matter of choice which a person of ordinary skill in the art would have found obvious absent persuasive evidence that the particular configuration of the claimed separator assembly is significant. In re Dailey, 149 USPQ 47. It is also noted that aesthetic design changes having no mechanical function cannot be relied upon to patentably distinguish the claimed invention from the prior art. In re Seid, 73 USPQ 431. (See MPEP 2144.04 [R-1] Legal Precedent as Source of Supporting Rationale)

With respect to the specific height of flow passage partition, it would have been obvious to a person possessing a level of ordinary skill in the pertinent art at the time the invention was made to make the flow passage partition of the separator of the JP'153 by having the specifically claimed height because where the only difference between the prior art and the claims is a recitation of relative dimensions (*i.e. changes in size/proportion*) of the claimed feature and a feature having the claimed relative dimensions would not perform differently than the prior art device, element, or member, the claimed device, element, or member is not patentably distinct from the prior art device, element, or member. That is, limitations relating to the size of the feature, element, or member are not sufficient to patentably distinguish over the prior art as it is noted that changes in size is a matter of choice which a person of ordinary skill in the art would have found obvious absent persuasive evidence that the particular size of the claimed height of the flow passage partition is significant. In re Rose 105 USPQ 237; In re Rinehart 189 USPQ 143; In Gardner v. TEC Systems, Inc., 220 USPQ 777 & 225 USPQ 232, (See MPEP 2144.04 [R-1] Legal Precedent as Source of Supporting Rationale).

Art Unit: 1745

5. Claims 1, 6 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over the Japanese publication 2000-208153 (hereinafter referred to as the JP'153) in view of Ong et al 5531956.

The present claims are geared toward a separator assembly wherein the disclosed inventive concept comprises the specific diffusion layer and separator being joined (welded).

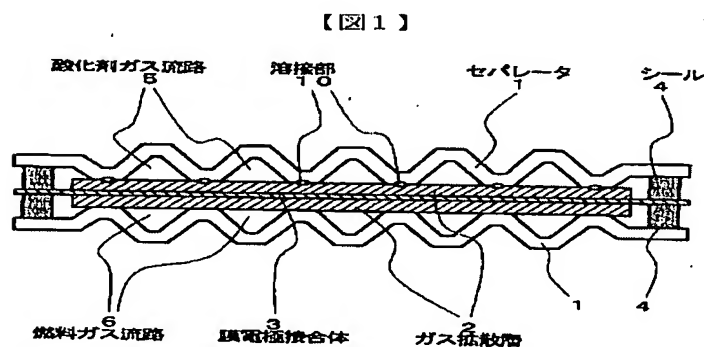
As to claim 1:

The JP'153 discloses a porous metallic gas diffusion layer for diffusing fuel cell reactants (ABSTRACT/P0007). The gas diffusion layer is made of stainless steel (ABSTRACT).

The JP'153 also discloses a metallic separator which is positioned adjacent to the gas diffusion layer (ABSTRACT/P0005).

Both the gas diffusion layer and the metallic separator are bonded by resistance welding at a welding part 10. *Thus, they are welded together.*

Figure 1 below illustrates the gas diffusion layer 2 and the separator 1 adjacent to each other; the gas flow channels 5 and 6; and the welding parts 10.



1st Examiner's note: *It is noted that the instant claims are being construed as product-by-process claims and that the product itself does not depend on the process of making it. Accordingly, in a product-by-process claim, the patentability of a product does not depend on its*

method of production. In that, it is further noted that the product in the instant claims is the same as or obvious over the product of the prior art. In this instant case, the method limitations (i.e. the laser welding or by melting, or by irradiation by a laser beam and by solidifying) do not patentably distinguish the product because what is given patentable consideration is the product itself and not the manner in which the product was made. Therefore, the patentability of a product is independent of how it was made. In re Brown 173 USPQ 685 and In re Fessman 180 USPQ 324 (Refer to MPEP 2113: Product-by-Process Claims).

As shown above in **Figure 1**, the combination of the corrugated separators 1 and the welding parts 10 allows the formation of reactant passages 5 and 6 (See Figure 1). *Note: the part connecting separator plate 1 and diffusion layer 2 clearly forms partitions in the diffusion layer; consequently, oxidizing gas or fuel pathways are formed. Additionally, welding part 10 formed in the diffusion layer is also part of the partition formed therein.*

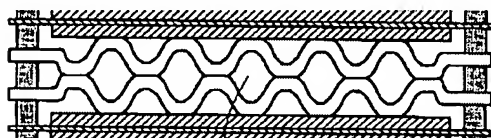
2nd Examiner's note: *as to the limitation "the separator being substantially flat", the examiner notes that non-corrugated areas of the disclosed separator 1 are flat. That is to say, each and every segment of the separator 1 (See Figure 1) that is not angled is flat, and thus, it meets the claimed requirement of being "substantially flat" at those specific locations. Note that the examiner is not stating that the entire area or entire perimeter or entire length of the separator is flat per se, but the examiner is stating herein that even though the separator disclosed by the JP '153 is corrugated, such a corrugated separator further comprises non-corrugated areas having a substantially flat shape. Yet further, the examiner contends that the two ends of the disclosed separator meet the requirement of being substantially flat because*

Art Unit: 1745

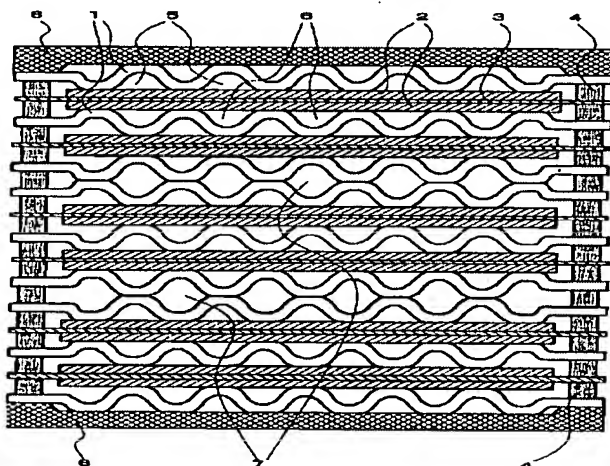
applicant has not further specified whether the entire separator, or the central area thereof or ends thereof is(are) flat.

As for claim 6:

Figure 4 below of the JP'153 illustrates the inclusion of separator layers forming cooling water passages 7. Note that such separator layers are joined together or bonded to form the cooling water passage structure. Enlarged portion of Figure 4 better illustrates this configuration.



【 FIG. 4 】



On the matter of claim 16:

As appreciated from viewing **Figure 1** above, the combination of the corrugated separators 1 and the welding parts 10 allows the formation of reactant passages 5 and 6 (See Figure 1). Note that the part connecting separator plate 1 and diffusion layer 2 clearly forms partitions in the diffusion layer; consequently, oxidizing gas or fuel pathways are formed.

Art Unit: 1745

Additionally, welding part 10 formed in the diffusion layer is also part of the partition formed therein.

The JP'153 discloses a separator as seen and discussed supra. Nonetheless, the preceding prior art reference fails to explicitly disclose the entire area of the separator being substantially flat; and the specific height of flow passage partition.

Ong et al disclose the use of flat separator plates in fuel cells (COL 1, lines 25-29).

In view of the above, it would have been obvious to a person having ordinary skill in the art to replace the corrugated separator plate of the JP'153 with the flat separator plate of Ong et al as Ong et al disclose that the overall cost of a fuel cell stack can be greatly diminished if flat separator plates can be used in place of corrugated separator plates. Thus, Ong et al directly suggest the use of flat separator plates for purposes of cost reduction so as to avoid the use of complex and costly corrugated plates. *Note that other than being complex and of high cost, Ong et al do not disclose any other technical disadvantage to using corrugated plates. Therefore, Ong et al's preference of flat separator plates over corrugated separator plates is based on cost reduction rather than a technical disadvantage. As such, Ong et al does not teach away from using corrugated separator plates due to mechanical, structural or technical drawbacks.* In further support of that, it is contended that it is prima-facie obvious to change the shape of a feature/article. In general, change in shape is a matter of choice which a person of ordinary skill in the art would have found obvious absent persuasive evidence that the particular configuration of the claimed separator assembly is significant. In re Dailey, 149 USPQ 47. It is also noted that aesthetic design changes having no mechanical function cannot be relied upon to patentably

Art Unit: 1745

distinguish the claimed invention from the prior art. In re Seid, 73 USPQ 431. (See MPEP 2144.04 [R-1] Legal Precedent as Source of Supporting Rationale).

With respect to the specific height of flow passage partition, it would have been obvious to a person possessing a level of ordinary skill in the pertinent art at the time the invention was made to make the flow passage partition of the separator of the JP'153 by having the specifically claimed height because where the only difference between the prior art and the claims is a recitation of relative dimensions (*i.e. changes in size/proportion*) of the claimed feature and a feature having the claimed relative dimensions would not perform differently than the prior art device, element, or member, the claimed device, element, or member is not patentably distinct from the prior art device, element, or member. That is, limitations relating to the size of the feature, element, or member are not sufficient to patentably distinguish over the prior art as it is noted that changes in size is a matter of choice which a person of ordinary skill in the art would have found obvious absent persuasive evidence that the particular size of the claimed height of the flow passage partition is significant. In re Rose 105 USPQ 237; In re Rinehart 189 USPQ 143; In Gardner v. TEC Systems, Inc., 220 USPQ 777 & 225 USPQ 232, (See MPEP 2144.04 [R-1] Legal Precedent as Source of Supporting Rationale).

Response to Arguments

6. Applicant's arguments with respect to claims 1, 6 and 16 have been considered but are moot in view of the new ground(s) of rejection. See item 3 above.
7. The arguments advanced by the applicant in the amendment dated 04/25/07 have been thoroughly considered but they are still unpersuasive.

Art Unit: 1745

8. Applicant has contended that “JP 2002-208153 does not disclose or teach that the separator is substantially flat, and the separator and the diffusion layer are welded together”.

The examiner respectfully disagrees with applicant’s contention. As to the limitation “the separator being substantially flat”, the examiner notes that it is prima-facie obvious to change the shape of a feature/article. In general, change in shape is a matter of choice which a person of ordinary skill in the art would have found obvious absent persuasive evidence that the particular configuration of the claimed separator assembly is significant. In re Dailey, 149 USPQ 47. It is also noted that aesthetic design changes having no mechanical function cannot be relied upon to patentably distinguish the claimed invention from the prior art. In re Seid, 73 USPQ 431. (See MPEP 2144.04 [R-1] Legal Precedent as Source of Supporting Rationale).

Additionally, it is further noted that non-corrugated areas of the disclosed separator 1 are flat. That is to say, each and every segment of the separator 1 (See Figure 1) that is not angled is flat, and thus, the JP’153 teaches portions of the separator being “*substantially flat*”. Therefore, the JP’153 encompasses separators with flat portions even though the Examiner recognizes that an entire area of the JP’153’s separator is not flat.

As for the limitation “*welded*”, applicant insists on asserting that having “the separator welded by laser welding” distinguishes over the prior art. Note that such a limitation has been construed as being directed to a product-by-process limitation which adds nothing to the patentability of the separator because the method of making a product in a product claim is ineffective to overcome a rejection based on the product unless applicant demonstrates that the process of making the product produces a product with a different structure and/or superior characteristics/properties. So far, no evidence to sustain that assertion has been positively

provided or submitted. Notice please that both the gas diffusion layer and the metallic separator are bonded by resistance welding at a welding part 10. Thus, they are welded together. With respect to the specific welding technique (i.e. "laser welding"), the examiner has treated this limitation as a product-by-process limitation (See *1st Examiner Note* in the rejection above), and among other things, applicant bears the burden to demonstrate that such a claimed technique produces unexpected results and/or a different structure. One more time, no such evidence has been provided to rebut the prima-facie case of obviousness/anticipation based upon a product-by-process claim imposed by the examiner.

9. Applicant has also contended that "*JP 2002-208153 does not disclose or teach that flow passage partitions are formed in the diffusion layer so as to define a flow passage for the fuel or oxidizer in the diffusion layer*". Again, this contention is respectfully but strenuously disagreed with. As previously explained, as seen above in Figure 1, the combination of the corrugated separators 1 and the welding parts 10 allows the formation of reactant passages 5 and 6 (See Figure 1). Note that the part connecting separator plate 1 and diffusion layer 2 clearly forms partitions in the diffusion layer; consequently, oxidizing gas or fuel pathways are formed. Additionally, welding part 10 formed in the diffusion layer is also part of the partition formed therein.

10. In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5

Art Unit: 1745

USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992).

In this case, the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. (*Emphasis provided*→) Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981). In this case, Marianowski et al disclose that while it is preferred to use separator having a corrugated and/or dimpled cross-sectional shape in the active area to provide both strength and better gas circulation adjacent the electrodes, the principles of this invention are also applicable to flat separator plates structured to provide peripheral seal areas and to provide seals around internal manifold holes while allowing gas to pass to and from the internal manifolds as required for fuel cell operation. *Thus, Marianowski et al provide sufficient direction to interchange corrugated separator plates and flat separator plates without affecting or generating major technical, structural or mechanical disadvantages.* Likewise, Ong et al directly suggest the use of flat separator plates for purposes of cost reduction so as to avoid the use of complex and costly corrugated plates. *Note that other than being complex and of high cost, Ong et al do not disclose any other technical disadvantage to using corrugated plates. Therefore, Ong et al's preference of flat separator plates over corrugated separator plates is based on cost reduction rather than a technical disadvantage. As such, Ong et al does not teach away from using corrugated separator plates due to mechanical, structural or technical drawbacks.* The foregoing clearly shows that Marianowski et al's and/or Ong et al's flat separators can be suitably interchanged with the shaped separator of JP'153 without prompting to cause deleterious

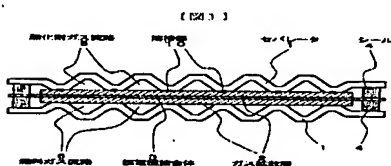
Art Unit: 1745

or detrimental damages to the fuel cell structure of the JP'153. Suffice it to say, that there are sufficient reasons to use flat separators in the JP'153 for the benefits manifested by Marianowski et al's and/or Ong et al.

11. Finally, applicant has contended that "*JP 200-208153 does not disclose that a cooling layer and a separator are welded together*". However, **Figure 4** above depicts the inclusion of separator layers forming cooling water passages 7. *Note that such separator layers are joined together or bonded to form the cooling water passage structure.*

The following responses to applicant's arguments were set forth in prior office actions, and thus, are again presented for the reasons of record.

12. Turning now to applicant's discussion on the JP'153. In response to applicant's argument about the apparent lack of "flow passages partitions formed on the diffusion layer so as to define a flow passage for the fuel or oxidizer in the diffusion layer" in the JP'153, the examiner states that as shown above in **Figure 1**, the combination of the corrugated separators 1 and gas diffusion layers 2, and/or the welding parts 10 allows the formation of reactant passages 5 and 6 (See Figure 1). It is strenuously noted that the part connecting separator plate 1 and diffusion layer 2 clearly forms partitions in the diffusion layer; consequently, oxidizing gas or fuel passages 5 and 6 are formed. Additionally, welding part 10 formed in the diffusion layer is also part of the partition formed therein, and such a welding part can be taken as a partition by itself, or collectively with features 1 (separators) and 3 (gas diffusion layers). Clearly, **Figure 1** shows partitions forming both fuel and oxidizer gas flow passages.



Art Unit: 1745

13. In following applicant's arguments, it is noted that it has been argued that the JP'153 *"discloses that adjacent separators form a coolant passage. JP'153, however, does not disclose that a cooling layer and a separator are welded together..."*. The examiner respectfully but strenuously disagrees with applicant's full characterization of the prior art. In partial agreement with applicant's assertion, the JP'153 discloses adjacent separators forming a coolant passage (as admitted by the applicant, see the 08/17/06 amendment paragraph bridging pages 8-9). However, the examiner has construed one of the adjacent separators as *"the claimed cooling layer"* as it provides essentially the same structure (i.e. cooling layer welded with the separator) as well as the same functionality (i.e. for allowing the passing of coolant) as *"the claimed cooling layer"*. It is just a matter of semantic labeling, one in which applicant prefers to call or name it *"the cooling layer"*, and the other (the JP'153) designates it *"the adjacent separator"*.

Conclusion

14. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

Art Unit: 1745


however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Raymond Alejandro whose telephone number is (571) 272-1282. The examiner can normally be reached on Monday-Thursday (8:00 am - 6:30 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick J. Ryan can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Raymond Alejandro
Primary Examiner
Art Unit 1745



RAYMOND ALEJANDRO
PRIMARY EXAMINER